Amendments to the Claims

The following Listing of Claims replaces all prior versions in the application.

Listing of Claims

1. (currently amended) A microporous hollow fiber support ~~fiber~~ membrane comprising solvent-resistant polybenzimidazole having the following characteristics:

(i) surface pores less than one micron in diameter;

(ii) nitrogen permeance of at least 5 $m^3/m^2 \cdot hr \cdot atm$;

(iii) tensile strength of at least 100 g/fil;

(iv) elongation at break of at least 10%;

(v) an inner diameter of from about 200 to about 1000 microns; and

(vi) a wall thickness of from about 30 to about 200 microns

wherein said hollow fiber support ~~fiber~~ membrane has been rendered solvent-resistant by cross-linking with an ~~a multi-functional~~ alkyl halide selected from the group consisting of

$$X\text{-}(CH_2)_n\text{-}CH_2\text{-}X \quad \text{and}$$

$$X\text{-}(CH_2)_a\text{-}CH(\text{-}(CH_2)_c\text{-}CH_3)\text{-}(CH_2)_b\text{-}X$$

where X is selected from Br and Cl,

n is an integer of from 1 to 11,

a is an integer of from 1 to 10,

b is a number of from 0 to 4, and

c is a number of from 0 to 6.

2. (currently amended) The support ~~fiber~~ membrane of claim 1 having a nitrogen permeance of at least 10 $m^3/m^2 \cdot hr \cdot atm$, a tensile strength of at least 200 g/fil and an elongation at break of at least 15%.

3. (currently amended) A separation module comprising:

(a) a chamber having feed and retentate ends and means for removing permeate near the feed end;

(b) a bundle of thin film composite hollow fiber membranes arranged substantially parallel to each other in said chamber, each of said composite hollow fiber membranes comprising a microporous solvent-resistant hollow fiber support ~~fiber~~ membrane comprising polybenzimidazole having at least one permselective coating on the surface of said support membrane ~~fiber~~, said support ~~fiber~~ membrane having the following characteristics:

(i) surface pores less than one micron in diameter,

(ii) nitrogen permeance of at least 5 $m^3/m^2 \cdot hr \cdot atm$,

(iii) tensile strength of at least 100 g/fil,

(iv) elongation at break of at least 10%,

(v) an inner diameter of from about 200 to about 1000 microns, and

(vi) a wall thickness of from about 30 to about 200 microns

wherein said hollow fiber support ~~fiber~~ membrane has been rendered solvent-resistant by cross-linking with an ~~a multi-functional~~ alkyl halide selected from the group consisting of

$$X\text{-}(CH_2)_n\text{-}CH_2\text{-}X \quad \text{and}$$

$$X\text{-}(CH_2)_a\text{-}CH(\text{-}(CH_2)_c\text{-}CH_3)\text{-}(CH_2)_b\text{-}X$$

where X is selected from Br and Cl,

n is an integer of from 1 to 11,

a is an integer of from 1 to 10,

b is a number of from 0 to 4, and

c is a number of from 0 to 6 ; and

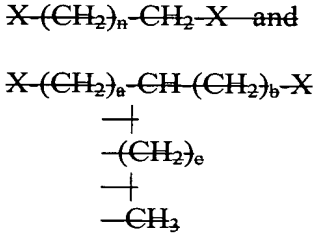
(c) means for securing and sealing said bundle of composite hollow fiber membranes to said chamber at said feed and retentate ends so as to permit fluid communication with a feed stream.

4. (currently amended) The module of claim 3 wherein said support membrane ~~fiber~~ has a nitrogen permeance of at least 10 $m^3/m^2 \cdot hr \cdot atm$, a tensile strength of at least 200 g/fil and an elongation at break of at least 15%.

5 - 21 (Cancelled)

22. (currently amended) The hollow fiber support membrane ~~fiber~~ of claim 1 wherein said crosslinking is conducted by contacting said support membrane with a crosslinking solution comprising ~~a multi-functional~~ said alkyl halide in a solvent followed by heating said support membrane sufficiently to cause crosslinking to take place.

23. (currently amended) The hollow fiber support membrane ~~fiber~~ of claim 22 wherein said solvent is selected from a ketone and an ether. ~~and said multi-functional alkyl halide has a structure selected from~~



~~where X is selected from Br and Cl,~~

~~n is an integer of from 1 to 11,~~

~~a is an integer of from 1 to 10,~~

~~b is a number of from 0 to 4, and~~

~~c is a number of from 0 to 6.~~

24. (currently amended) The hollow fiber support membrane ~~fiber~~ of claim 23 wherein said ~~multi-functional~~ alkyl halide is dibromobutane, said solvent is selected from the group consisting of acetone, methyl isobutyl ketone, methyl ethyl ketone and pentanone, and said heating is conducted at a temperature of from 25° to 200°C for 0.5 to 48 hours.

25. (currently amended) The hollow fiber support membrane ~~fiber~~ of claim 22 wherein a surface of said ~~hollow fiber~~ support membrane is coated with at least one permselective coating.

26. (currently amended) The hollow fiber support membrane ~~fiber~~ of claim 25 wherein said at least one permselective coating is a crosslinked polymer selected from the

group consisting of poly (acrylic acids), poly (acrylates), polyacetylenes, poly (vinyl acetates), polyacrylonitriles, polyamines, polyamides, polyethers, polyurethanes, polyvinyl alcohols, polyesters, cellulose, cellulose esters, cellulose ethers, chitosan, chitin, polymers containing hydrophilic groups, elastomeric polymers, halogenated polymers, fluoroelastomers, polyvinyl halides, polyphosphazenes, poly(trimethylsilylpropyne), polysiloxanes, poly (dimethyl siloxanes) and copolymers and blends thereof.